Linking Mexican Spotted Owl Recovery Guidance and Desired Conditions for Mixed Conifer Forest

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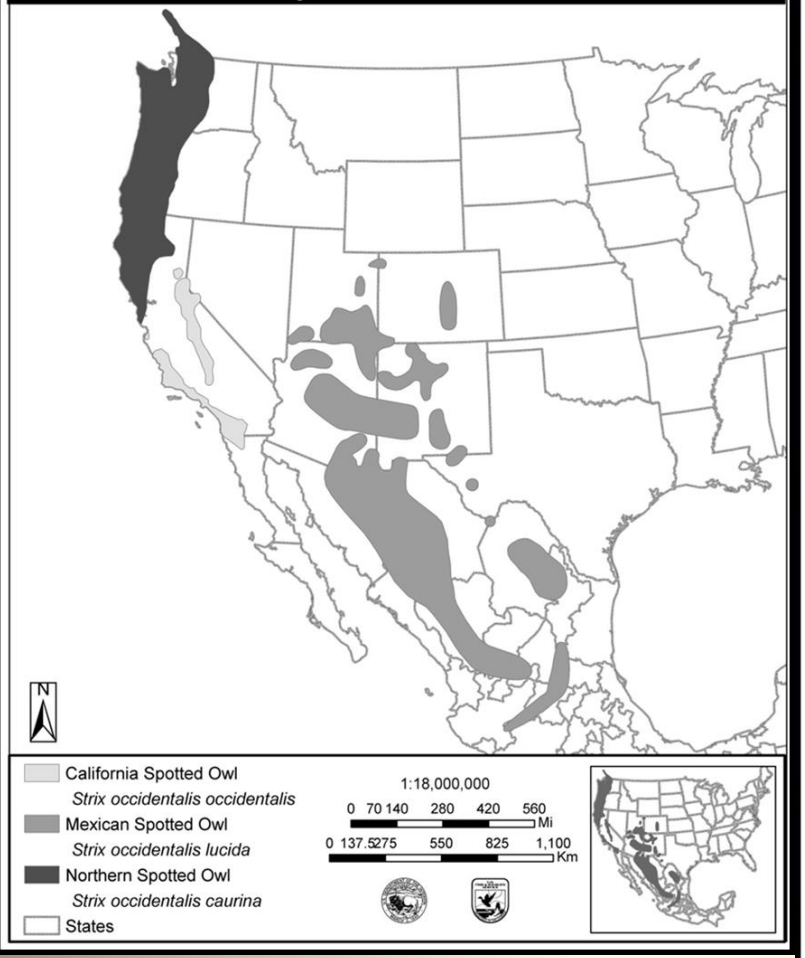
Presentation Outline

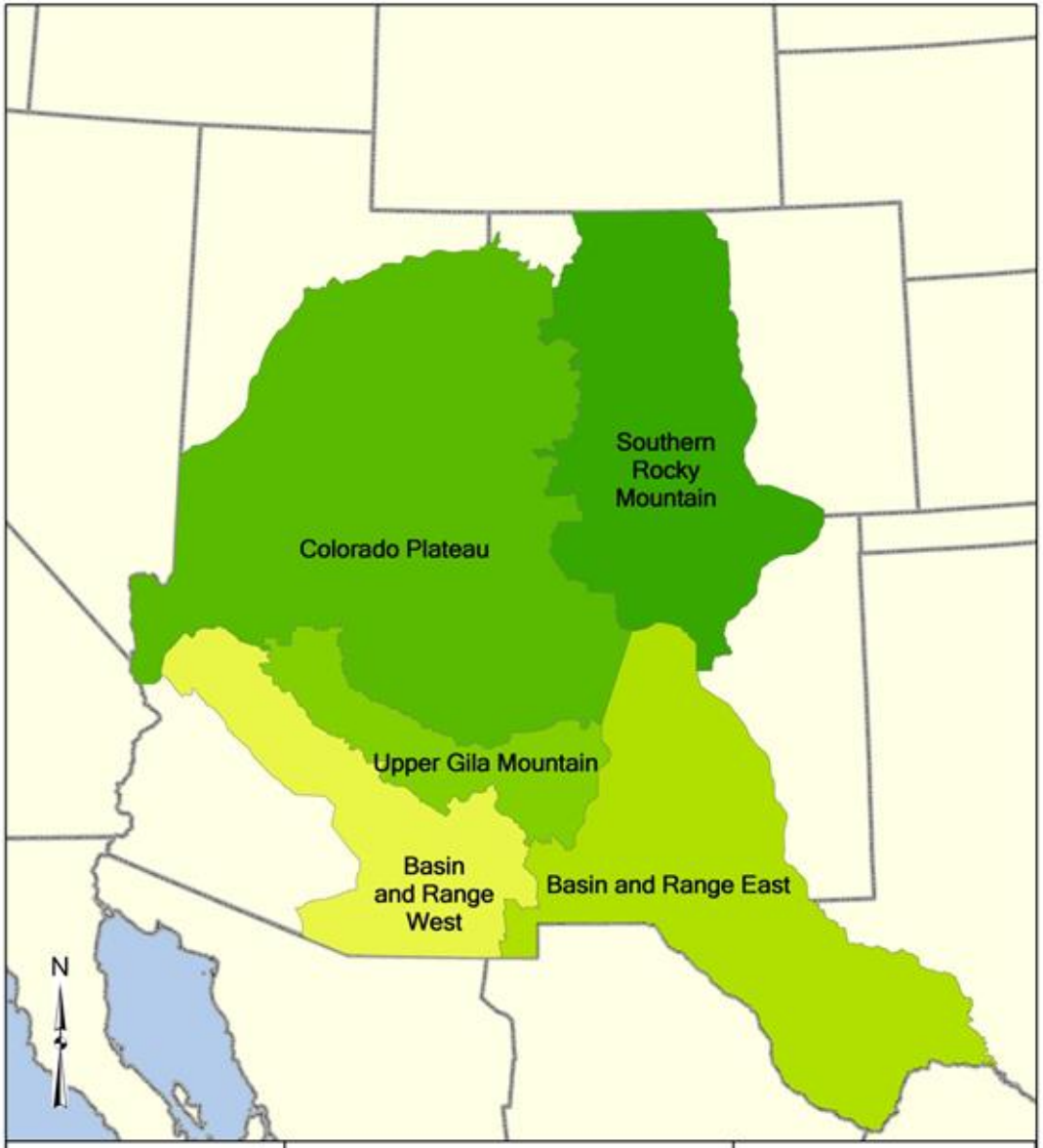
- Background
- What do we currently know about owls/forest management
- Revised Recovery Plan Recommendations
- Links with Forest Service Desired Conditions for Mixed Conifer
- Need for additional information

Background

- Listed as threatened in 1993 under the ESA, Critical Habitat designated in 2004
- Recovery Plan signed in 1995
- Recovery Plan Incorporated into Forest Plans by amendment in 1996
- Revised Recovery Plan 2012

Spotted Owl (*Strix occidentalis*) Subspecies Distribution





Threats: Then and Now

- **Listing 1993: Even-aged management, lack of regulatory mechanisms**
- **Recovery Plan 1995: Forest management, high-severity wildfire, lack of regulatory mechanisms**
- **Recovery Plan Revision: High-severity wildfire, forest management (Jones et al. 2016, etc.)**

What have we learned about owls and forest management?

- To date, few treatments have occurred in PACs
- More treatments conducted in unoccupied habitat, but….
- Very little pre- and post-treatment habitat and owl monitoring data available for any of these projects

California Spotted Owl Response to Thinning Treatments

- Stephens et al. 2014, northern Sierra Nevada
- Documented decline in the number of CSO territories as a result of landscape fuel treatments
- Factors driving decline unknown

MEXICAN SPOTTED OWL RECOVERY PLAN, FIRST REVISON

(*Strix occidentalis lucida*)

Original Approval Date: October 16, 1995

Southwest Region
U.S. Fish and Wildlife Service
Albuquerque, New Mexico

September 2012

Approved: Acting Regional Director, Region 2
U.S. Fish and Wildlife Service

Date: SEP 05 2012

Ecological Forestry*

- Retention of structural and compositional elements
- Manipulation to direct forest development
- Identify key structures/processes (fire!)
- Maintain owl habitat patches or patch clusters

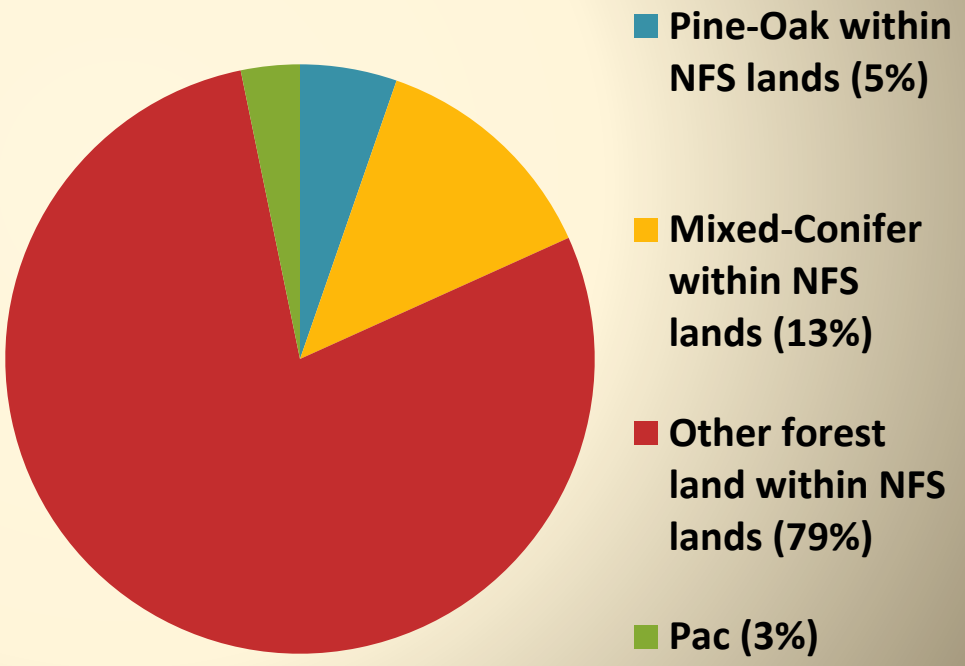
*Franklin et al. 2007

General Revised RP Recommendations for Forest Management

- Embed high-quality owl habitat patches in a matrix that has been treated
- Embed owl habitat patches where fire refugia may naturally occur
- Focus on creating and enhancing diverse forest structure
- Manage for a range of stand conditions
- Use fire as appropriate
- **MONITOR!!!!!!!**

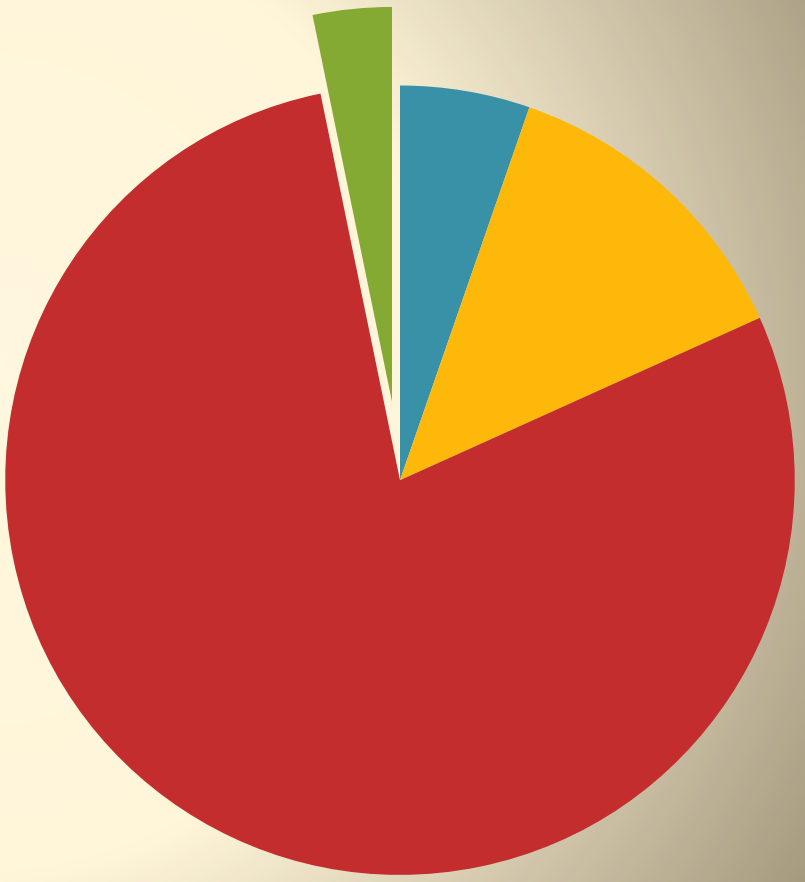
General Management Recommendations in Revised Recovery Plan

- Protect known territories (PACs)
- Manage for replacement nest/roost habitat
- Other forest and woodland types



PAC Recommendations in Revised Recovery Plan

- Delineate ~600 acres around known owl sites
- Delineate ~100-acre nest/roost core within PAC
- Rx fire recommended outside breeding season in PAC
- May thin 20% of PAC area in each Ecological Management Unit



Managing for Future Owl Habitat (nest/roost replacement habitat)

- Within a sub-set of recovery habitat, recommendation to manage for future nest/roost habitat
- In mixed-conifer, 20% of recovery habitat should be identified as nest/roost replacement habitat in BRE EMU.

Key Habitat Components

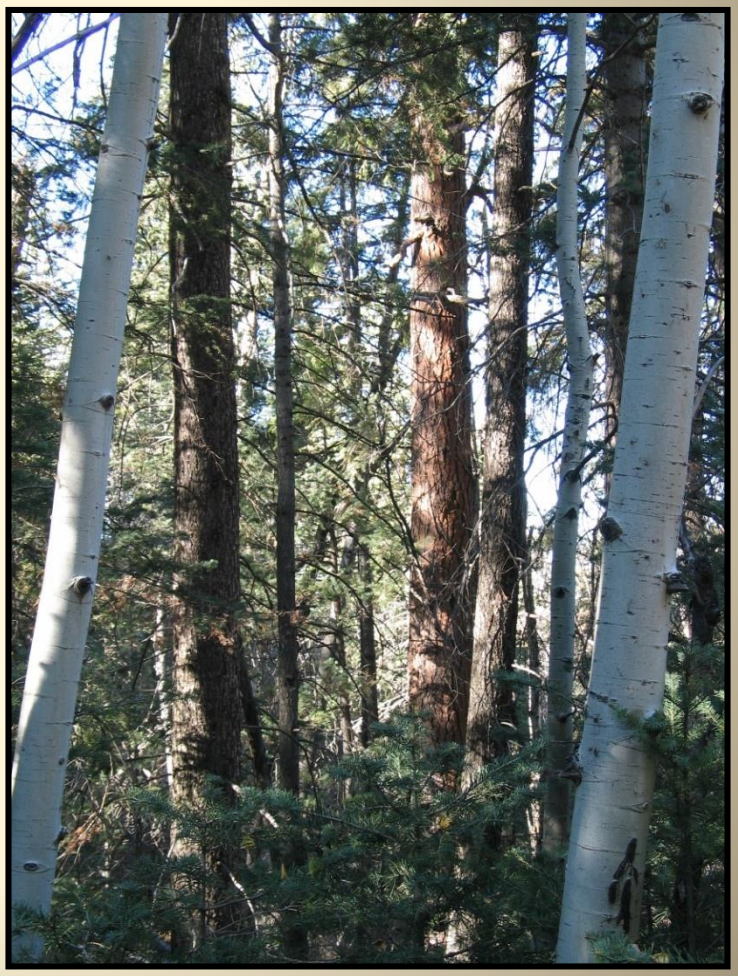
- Multi-layered canopy with large overstory trees
- Species diversity (conifer and hardwoods)
- Moderate to high canopy closure
- Wide range of tree sizes (“uneven-aged”)
- High levels of large snags and downed woody debris

Desired Conditions within PACs and Recovery Nest/Roost Habitat

- Diversity of patch size
- Horizontal and vertical habitat heterogeneity within patches
- Tree species diversity, esp. mix of hardwoods and shade-tolerant spp.
- Diverse herbaceous and shrub layer
- Openings (0.1 to 2.5 ac)
- Minimum canopy cover (60% in MC, 40% in PO)
- Diversity of tree sizes, with larger trees contributing >50% of stand BA

a.k.a….Conditions That Make Forest Managers Nervous

- Multi-layered structure can result in fire ladders, crown fire
- Stands with higher tree densities can be more susceptible to insects and pathogens



FS DCs and Revised Recovery Plan Recommendations: Common Ground

- Provide diversity of tree species and age composition
- Diversity of forest spatial characteristics (e.g. openings, closed-canopy forest)
- Manage for biological diversity and natural frequency/level of disturbance

Minimum Desired Conditions Nest/Roost Habitat

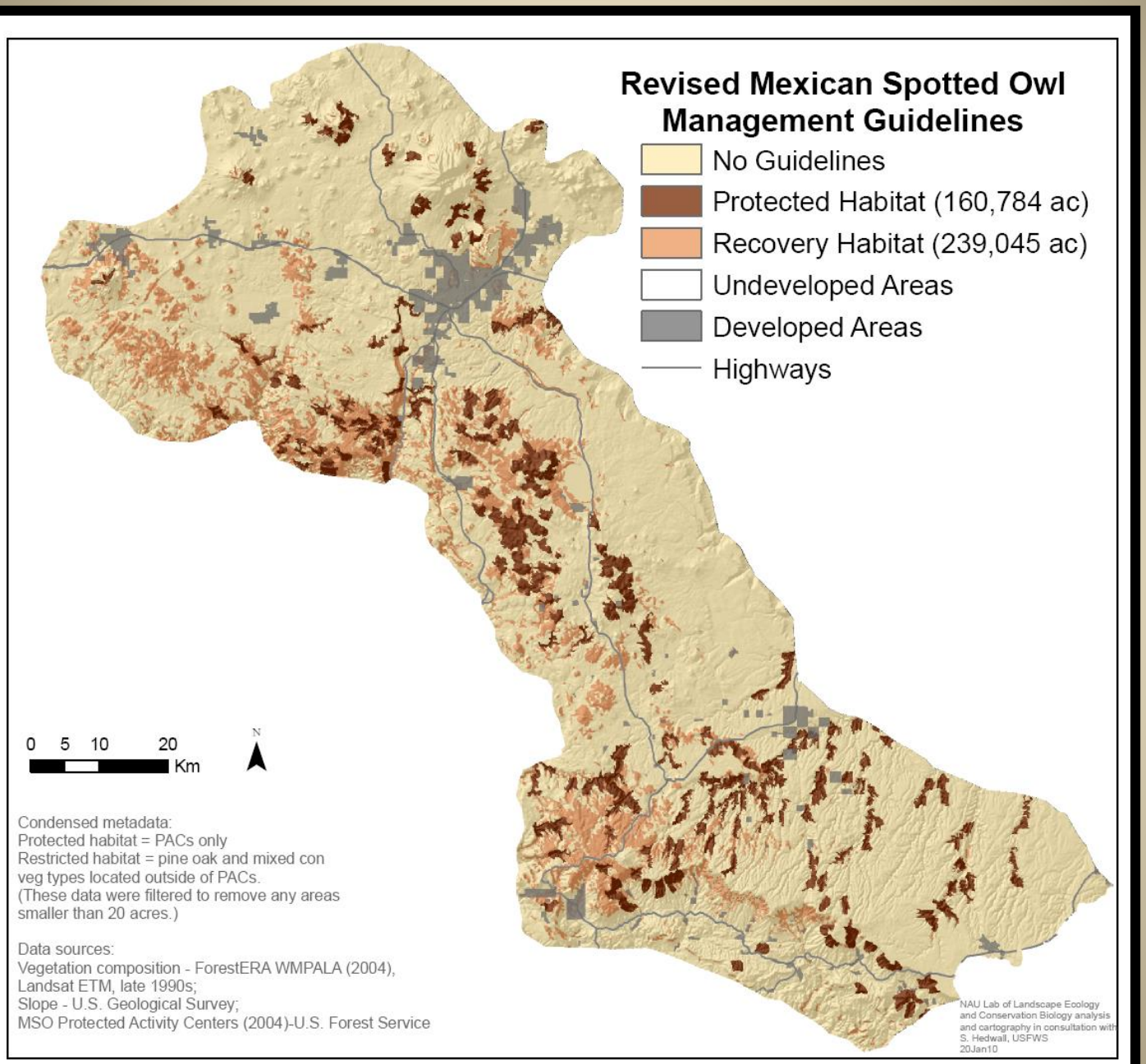
EMU(s) Forest Type	% of area	% BA by size class		Minimum tree BA (ft^2/acre)	Minimum density of large trees (trees/ac)
		12-18”	>18”		
BRE Mixed-conifer	20	>30	>30	145	15
CP, UGM, SRM, BRW Mixed-conifer	25	>30	>30	120	12
CP, UGM, BRW Pine-oak	10	>30	>30	110	12

Lincoln NF DFCs for N/R Replacement Habitat

- Only 22% of nest sites evaluated met all four conditions simultaneously
- Canopy cover and % BA trees > 18 inches dbh best predictors of nest sites
- Need to revise desired conditions in Sacramento Mountains
- Need to repeat assessment in other geographic areas

How do we link Desired Conditions and Recovery?

- Integrating management of owl habitat with landscape-scale restoration is a major challenge
- However, planning at the landscape scale may be key


Revised Mexican Spotted Owl Management Guidelines
No Guidelines
Protected Habitat (160,784 ac)
Recovery Habitat (239,045 ac)
Undeveloped Areas
Developed Areas
Highways
0 5 10 20
Km
N
Condensed metadata:
Protected habitat = PACs only
Restricted habitat = pine oak and mixed con
veg types located outside of PACs.
(These data were filtered to remove any areas
smaller than 20 acres.)
Data sources:
Vegetation composition - ForestERA WMPALA (2004),
Landsat ETM, late 1990s;
Slope - U.S. Geological Survey;
MSO Protected Activity Centers (2004)-U.S. Forest Service
NAU Lab of Landscape Ecology
and Conservation Biology analysis
and cartography in consultation with
S. Hedwall, USFWS
20Jan10

Forest Restoration and Owls

- Logically, we can assume either:
  - Areas/sites occupied by owls for nesting/roosting were less common on the landscape, or
  - Occupied sites were more open
  - Or both?

Forest Restoration and Owls

- This suggests we could manage for:
  - Fewer nest/roost patches, or
  - More open nest/roost patches
- But, where are the thresholds?
  - How much can we open up these patches?
  - How many patches do we need? How big?
  - How should these patches be arranged on the landscape?

Challenges

- Scale
- Lack of information
- Cost of treatments, monitoring
- Stands vs. habitat
- Details, details, details…

Implementation and Need for Additional Information

- We cannot move forward without learning from what we are doing. Research and monitoring are needed to understand how thinning and fire affects owls.
- If PACs are treated, it should be within an adaptive management framework.
- Monitoring should be dual-faceted: effectiveness and overall population monitoring needed.